

SEQUENCE LISTING

<110> Stewart Jr., C. Neal
Broadway, Roxanne M.

<120> CABBAGE PROTEINASE INHIBITOR GENE CONFERS RESISTANCE
AGAINST PLANT PESTS

<130> 19603/2420

<140>

<141>

<160> 12

<170> PatentIn Ver. 2.1

<210> 1

<211> 809

<212> DNA

<213> Brassica oleracea

<220>

<221> source

<222> (1)..(809)

<223> Serine proteinase inhibitor

<400> 1

```

gatgaatcct atgttttact tccttcttgc ctttaccact gttttggcgg cgaccgcaaa 60
cgctggacca gttctcgaca ctgatgggta tatcatattc gacggcagtt actacgttct 120
ccccctcatc tggggcccta cagggtggcg cctaactctc gtctcccgtc gtggcaacca 180
gtgtcccctc tttatcggac aggagcgttc agaggtcaac aggggcattc ccgtgaaatt 240
ctcaaaactgg aggtccagag ttgggttcgt cccgaagaa gagaacctca acatcaagat 300
ggatgtcgaa cctacgatct gcgctcagtc agcttattgg tgggtcactc cagccccag 360
tccttgaggg tegtgtttca tagcggtcgt tcctaagcca gaagctggag gagaagattc 420
gtcgaggagt ttcttccaga tcaagaaaac tgaagccaaa cttaacgctt acaagtttgt 480
attctgtagt gagggtaacg attgcatcga tgtcggtaaa aacgaggaag gtggcgttcg 540
gggttttggt ttaggctcta cgccaccatt cgctacccca ttcgaggttg tgttcgtgaa 600
agctactggg acagacactt catccaagac tatgtctatt atctgagaga aattaaagac 660
cacttaataa agaggataag tgttataact tacctcta atataaaactc tatctatgta 720
tgatgttttc tttgttcata gatcatcatc atgtatggaa taaaacatct ttcctttgtt 780
tctaaaaaaa aaaaaaaaaa aaaaaaaaaa                                     809

```

<210> 2

<211> 214

<212> PRT

<213> Brassica oleracea

<220>

<221> PEPTIDE

<222> (1)..(214)

<223> Serine proteinase inhibitor

<400> 2

Met Asn Pro Met Phe Tyr Phe Leu Leu Ala Phe Thr Thr Val Leu Ala
1 5 10 15

Ala Thr Ala Asn Ala Gly Pro Val Leu Asp Thr Asp Gly Asp Ile Ile
20 25 30

Phe Asp Gly Ser Tyr Tyr Val Leu Pro Leu Ile Trp Gly Pro Thr Gly
35 40 45

Gly Gly Leu Thr Leu Val Ser Arg Arg Gly Asn Gln Cys Pro Leu Phe
50 55 60

Ile Gly Gln Glu Arg Ser Glu Val Asn Arg Gly Ile Pro Val Lys Phe
65 70 75 80

Ser Asn Trp Arg Ser Arg Val Gly Phe Val Pro Glu Glu Glu Asn Leu
85 90 95

Asn Ile Lys Met Asp Val Glu Pro Thr Ile Cys Ala Gln Ser Ala Tyr
100 105 110

Trp Trp Val Thr Pro Ala Pro Ser Pro Trp Arg Ser Leu Phe Ile Ala
115 120 125

Ala Gly Pro Lys Pro Glu Ala Gly Gly Glu Asp Ser Ser Arg Ser Phe
130 135 140

Phe Gln Ile Lys Lys Thr Glu Ala Lys Leu Asn Ala Tyr Lys Phe Val
145 150 155 160

Phe Cys Ser Glu Gly Asn Asp Cys Ile Asp Val Gly Lys Asn Glu Glu
165 170 175

Gly Gly Val Arg Gly Leu Val Leu Gly Ser Thr Pro Pro Phe Ala Thr
180 185 190

Pro Phe Glu Val Val Phe Val Lys Ala Thr Gly Thr Asp Thr Ser Ser
195 200 205

Lys Thr Met Ser Ile Ile
210

<210> 3
 <211> 216
 <212> PRT
 <213> G. max (soybean)

<220>
 <221> PEPTIDE
 <222> (1)..(216)
 <223> Kunitz-type trypsin inhibitor 3

<400> 3

```

Met Lys Ser Thr Ile Phe Phe Leu Phe Leu Phe Cys Ala Phe Thr Thr
  1              5              10              15

Ser Tyr Leu Pro Ser Ala Ile Ala Asp Phe Val Leu Asp Asn Glu Gly
          20              25              30

Asn Pro Leu Glu Asn Gly Gly Thr Tyr Tyr Ile Leu Ser Asp Ile Thr
          35              40              45

Ala Phe Gly Gly Ile Arg Ala Ala Pro Thr Gly Asn Glu Arg Cys Pro
          50              55              60

Leu Thr Val Val Gln Ser Arg Asn Glu Leu Asp Lys Gly Ile Gly Thr
          65              70              75              80

Ile Ile Ser Ser Pro Tyr Arg Ile Arg Phe Ile Ala Glu Gly His Pro
          85              90              95

Leu Ser Leu Lys Phe Asp Ser Phe Ala Val Ile Met Leu Cys Val Gly
          100             105             110

Ile Pro Thr Glu Trp Ser Val Val Glu Asp Leu Pro Glu Gly Pro Ala
          115             120             125

Val Lys Ile Gly Glu Asn Lys Asp Ala Met Asp Gly Trp Phe Arg Leu
          130             135             140

Glu Arg Val Ser Asp Asp Glu Phe Asn Asn Tyr Lys Leu Val Phe Cys
          145             150             155             160

Pro Gln Gln Ala Glu Asp Asp Lys Cys Gly Asp Ile Gly Ile Ser Ile
          165             170             175

Asp His Asp Asp Gly Thr Arg Arg Leu Val Val Ser Lys Asn Lys Pro
          180             185             190
  
```

Leu Val Val Gln Phe Gln Lys Leu Asp Lys Glu Ser Leu Ala Lys Lys
 195 200 205

Asn His Gly Leu Ser Arg Ser Glu
 210 215

<210> 4
 <211> 218
 <212> PRT
 <213> Brassica napus

<220>
 <221> PEPTIDE
 <222> (1) .. (218)
 <223> BnD22 drought-induced proteinase inhibitor

<400> 4
 Met Lys Thr Phe Phe Leu Val Thr Leu Leu Leu Ala Ala Ala Val Cys
 1 5 10 15

Thr His Gly Arg Glu Gln Val Lys Asp Ser Asn Gly Asn Pro Val Lys
 20 25 30

Arg Gly Ala Lys Tyr Phe Ile Gln Pro Ala Lys Ser Asn Ala Gly Gly
 35 40 45

Leu Val Pro Ala Ala Ile Asn Leu Leu Pro Phe Cys Pro Leu Gly Ile
 50 55 60

Thr Gln Thr Leu Leu Pro Tyr Gln Pro Gly Leu Pro Val Ser Phe Gly
 65 70 75 80

Tyr Glu Pro Val Ile Val Gly Thr Asp Tyr Ile Tyr Thr Ser Thr Thr
 85 90 95

Ile Asn Ile Glu Phe Glu Ser Asp Ile Trp Pro Val Cys Asn Glu Leu
 100 105 110

Ser Lys Leu Trp Ala Val Asp Val Ser Ser Ser Ala Ala Lys Glu Pro
 115 120 125

Ala Ile Ile Ile Gly Gly Glu Ser Thr Ala Pro Asn Ser Leu Phe Lys
 130 135 140

Ile Glu Glu Ala Thr Glu Ala Asn Thr Tyr Lys Leu Thr Thr Ser Tyr
 145 150 155 160

Gly Thr Val Gly Thr Ile Pro Gly Pro Trp Leu Ser Ala Pro Gln Leu
165 170 175

Ile Val Thr Asn Asp Glu Ser Lys Thr Leu Phe Val Lys Phe Val Lys
180 185 190

Val Asp Asp Ala Ala Thr Lys Ala Thr Thr Ser Thr Ser Arg Val Glu
195 200 205

Lys Leu Gly Leu Lys Met Phe Pro Phe Tyr
210 215

<210> 5

<211> 17

<212> PRT

<213> Brassica oleracea

<220>

<221> PEPTIDE

<222> (1)..(17)

<223> BoPI peptide

<400> 5

Val Leu Asp Thr Asp Gly Asp Ile Ile Phe Asp Gly Ser Tyr Tyr Val
1 5 10 15

Leu

<210> 6

<211> 37

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Kunitz
inhibitor family amino-terminal conserved region

<220>

<221> PEPTIDE

<222> (1)..(37)

<223> Xaa at any position is any amino acid

<400> 6

Leu Ile Val Asp Xaa Asp Xaa Glu Asp Asn Thr Tyr Asp Gly Arg Lys

1 5 10 15
 His Asp Glu Asn Gln Xaa Leu Ile Val Met Xaa Xaa Xaa Xaa Xaa Tyr
 20 25 30
 Xaa Leu Ile Val Met
 35

<210> 7
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 peptides

<400> 7
 ggcagttact acgttctccc c 21

<210> 8
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 peptides

<400> 8
 cgataggggt agcgaatg 18

<210> 9
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 peptides

<400> 9
 acgaccaatt tacagcccag 20

<210> 10
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptides

<400> 10
gttgtacaaa cgcttcctc agc 23

<210> 11
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptides

<400> 11
atttggggaa tctttgtcc 20

<210> 12
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptides

<400> 12
acagtacgga ttgggtagcg 20